

SHOBHIT NIRWAN's
DESIGNED



LIFE PROCESSES

NEW NOTES FOR CLASS 10 2022 EXAMS

Including PYQs in MCQ Format

NCERT Activities

Flowchart

Life Processes

For a living being it is necessary to perform basic functions for proper body functioning, so that it can prevent damage and breakdown of body and its functions. These are basic functions performed by organisms to maintain life known as life processes.



(L.P.) : What processes would you consider essential for maintaining life?

Four basic processes that are essential for maintaining life processes are-

1. Nutrition- it is the process of transferring source of energy (food) from outside to the body of an organism.
2. Respiration- it is the process of acquiring oxygen from outside into the body and using it for breaking down of glucose to release energy for cellular needs.
3. Transportation- it is process of carrying food and oxygen from one place to another.
4. Excretion- it is a process of removing by-products from body which are formed during energy generating reactions.



(L.P.) : Which are outside raw materials used by an organism?

Carbon based molecules i.e. food is used by body from outside to meet its energy need. Oxygen is used to oxidise food and release energy. So food and oxygen are the basic raw materials used by an organism.



(L.P.) : Transportation system transports waste products then what is the need of excretory system?

Transportation system transports waste products away from cells but to discard it from the body to outside excretory system is needed.



(L.P.) : Name the process used by single celled organisms for ingestion of food, gaseous exchange and waste removal? Why is this process insufficient to meet the oxygen requirements in multicellular organisms?

Diffusion is the process used by single celled organisms to carry out basic life processes such as gas exchange, etc.

It is insufficient because multicellular organisms like humans have complex body designs and large body size. Thus they bear specialised cells and tissue for performing various tasks.

Unlike unicellular, multicellular organisms do not have the cells in direct contact with environment. Hence, diffusion cannot meet their oxygen requirements.

NUTRITION

It is the process of transferring source of energy(food) from outside to inside the body of an organism for maintaining living structure.

Modes of Nutrition:

1. AUTOTROPHIC NUTRITION

It is mode of nutrition in which organisms, mainly green plants manufacture their food by itself. This mode of nutrition is performed by organisms called autotrophs.

On the basis of sources of energy:

1. **Photosynthesis Autotrophs-** organisms which fulfil their carbon and energy requirements by process of photosynthesis using sunlight as a source of energy.
Eg- Green plants.
2. **Chemosynthesis autotrophs-** organisms which utilise chemical energy to synthesize their organic materials(food). For eg- Bacteria

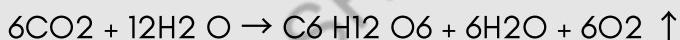


Kuch Kaam Ki Baat (K³B) :

PHOTOSYNTHESIS

It is a complex process by which green parts of the plant synthesize organic food in the form of glucose from carbon-di-oxide and water in the presence of sunlight and chlorophyll.

Reaction-



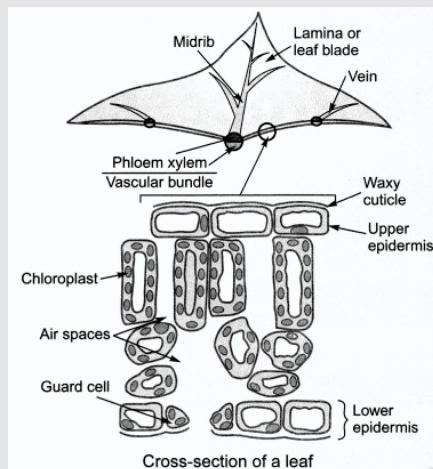
Carbohydrates (glucose) are utilised for providing energy to the plant. Remaining glucose which is not used are stored in form of starch that serves as reserved energy.

- **Leaves** are the major photosynthesis organs of a plant. Therefore, let's study about the INTERNAL STRUCTURE OF LEAF:

INTERNAL STRUCTURE OF LEAF

- Epidermis- outermost layer, parts-
- Upper epidermis- it is a single layer of transparent cells with no chloroplasts. It is covered by a waxy cuticle which protects internal leaf tissues by preventing excessive loss of water through transpiration.
- Lower epidermis- it contains stomata and helps in gaseous exchange and allows sunlight to pass in leaves.

- Stomata- these are tiny pores, mostly found in the lower epidermis of plants, which allows gases to enter and exit in the leaf more rapidly between plant and atmosphere.
- Guard cells- these are beans shaped cells that frame the stomatal opening. Hence, they control rate of diffusion of water and gases in and out of leaf.



(L.P.) : How does the turgor pressure of guard cells regulate stomatal pore?

The turgor pressure of guard cells regulates the opening and closing of stomatal pores. The stomatal pores are open when guard cells are turgid due to absorption of water and get closed when guard cells are in flaccid condition due to loss of water.

Chloroplasts : The green coloured plastids contained in leaves are called chloroplasts. They are the site of photosynthesis as they contain green pigment called chlorophyll which traps solar energy from sun. They are just below upper epidermis. It is present as dot-like structure on leaves.

#Events of Photosynthesis :

- Absorption of light by chlorophyll.
- Conversion of light energy into chemical energy and splitting of water molecules into hydrogen and oxygen.
- Reduction of carbon dioxide to carbohydrates.

#Conditions Necessary for Photosynthesis:

(i) Sunlight- It affects the rate of photosynthesis by varying its intensity, quality, etc.

Eg-

- (a) Rate of photosynthesis is minimum when light is green.
- (b) Rate of photosynthesis is maximum when light is red or blue.

(ii) Chlorophyll- Green colour photosynthetic pigment found in chloroplast that is responsible for trapping the solar energy from sun.

Lets do some activities for conditions necessary for photosynthesis.

NCERT ACTIVITY

(AASAN BHASHA MEI)

Activity to demonstrate that Chlorophyll is necessary for Photosynthesis

Activity 6.1



Figure 6.2
Variegated leaf (a) before
and (b) after starch test

- Take a potted plant with variegated leaves – for example, money plant or crotons.
- Keep the plant in a dark room for three days so that all the starch gets used up.
- Now keep the plant in sunlight for about six hours.
- Pluck a leaf from the plant. Mark the green areas in it and trace them on a sheet of paper.
- Dip the leaf in boiling water for a few minutes.
- After this, immerse it in a beaker containing alcohol.
- Carefully place the above beaker in a water-bath and heat till the alcohol begins to boil.
- What happens to the colour of the leaf? What is the colour of the solution?
- Now dip the leaf in a dilute solution of iodine for a few minutes.
- Take out the leaf and rinse off the iodine solution.
- Observe the colour of the leaf and compare this with the tracing of the leaf done in the beginning [Fig. 6.2].
- What can you conclude about the presence of starch in various areas of the leaf?

Chalo Ab Ise AASAN BHASHA MEI Samajhte hai :

- Take a potted plant with variegated leaves – for example, money plant or crotons.
- Keep the plant in a dark room for three days so that all the starch gets used up.
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- Now dip the leaf in a dilute solution of iodine for a few minutes.
- Take out the leaf and rinse off the iodine solution.
- Observe the colour of the leaf and compare this with the tracing of the leaf done in the beginning .

Question 1. What happens to the colour of the leaf? What is the colour of the solution?

Answer. The green leaf becomes colourless. On immersing green leaf in a alcohol, chlorophyll responsible for its green colour gets dissolves in alcohol. The colour of the alcohol solution turns green

Question 2. What can you conclude about the presence of starch in various areas of the leaf?

Answer. The green areas of leaf, which turns dark blue on dipping in iodine solution, indicate the presence of starch where as colorless part of leaf show no formation of starch. From this activity we can conclude that chlorophyll is essential for photosynthesis

NCERT ACTIVITY

(AASAN BHASHA MEI)

Activity to show that amount of Carbon Dioxide (CO₂), essentially affects the process and outcome of Photosynthesis

Activity 6.2

- Take two healthy potted plants which are nearly the same size.
- Keep them in a dark room for three days.
- Now place each plant on separate glass plates. Place a watch-glass containing potassium hydroxide by the side of one of the plants. The potassium hydroxide is used to absorb carbon dioxide.
- Cover both plants with separate bell-jars as shown in Fig. 6.4.
- Use vaseline to seal the bottom of the jars to the glass plates so that the set-up is air-tight.
- Keep the plants in sunlight for about two hours.
- Pluck a leaf from each plant and check for the presence of starch as in the above activity.
- Do both the leaves show the presence of the same amount of starch?
- What can you conclude from this activity?

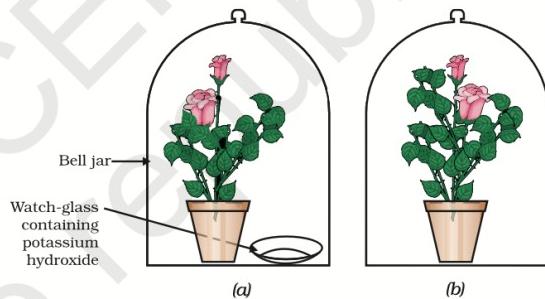


Figure 6.4 Experimental set-up (a) with potassium hydroxide (b) without potassium hydroxide

Chalo Ab Ise AASAN BHASHA MEI Samajhte hai :

- Take two healthy potted plants which are nearly the same size.
- Keep them in a dark room for three days.
- Now place each plant on separate glass plates. Place a watch-glass containing potassium hydroxide by the side of one of the plants. The potassium hydroxide is used to absorb carbon dioxide.
- Cover both plants with separate bell-jars as shown in Fig. .
- Use Vaseline to seal the bottom of the jars to the glass plates so that the set-up is air-tight.
- Keep the plants in sunlight for about two hours.
- Pluck a leaf from each plant and check for the presence of starch as in the above activity.

Question 1. Do both the leaves show the presence of the same amount of starch?

Answer. No, both the leaves do not show the presence of the same amount of starch, because in photosynthesis starch is produced using sun light, chlorophyll and CO₂. In first set up availability of CO₂ will be less for making starch by the plant leaves, as potassium hydroxide (KOH) absorb the CO₂. In second plant setup, the leaves will have more amount of starch.

Question 2. What can you conclude from this activity?

Answer. From this activity, we can conclude that amount of Carbon Dioxide (CO₂) , essentially affects the process and outcome of photosynthesis.

Raw materials required for photosynthesis:

- CO₂ - It is taken up through stomata from the atmospheric in case of land plants ,while in aquatic plants take up CO₂ dissolved in water.
- Water- it is taken up by the roots through the process of osmosis and its transported to the leaves by xylem vessels.
- Other Materials- Nitrogen, Iron and Magnesium are also required for photosynthesis taken up from soil.

#Significance of Photosynthesis:

It not only sustains plants but indirectly provides nutrition and oxygen to other organisms as well as it provides→

- a) Food- green plants synthesize food from raw materials for themselves and other organisms and thus sustain life on earth.
- b) Oxygen- In process of photosynthesis, oxygen releases in air which is used by other organisms.



(L.P.) : Is 'nutrition' a necessity for an organism? Discuss.

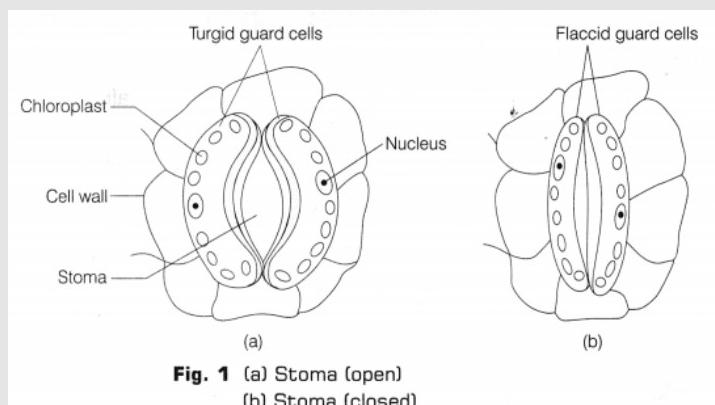
All the living organisms need energy to perform various life processes. They get energy from nutrition i.e. food. Thus, it is the basic requirement of all organisms. It is needed because-

1. It provides energy to perform various metabolic processes in body.
2. It is essential for growth of new cells and repair of worn out cells.
3. It is needed to develop resistance against various diseases. Therefore, nutrition is a necessity for an organism.



(L.P.) : Draw a well labelled diagram of stomata. List of two functions of stomata.

1. Allow the loss of water from surface of leaves(transpiration).
2. Allow the exchange of gases i.e. intake of carbon-di-oxide and release of oxygen during photosynthesis.



1. HETROTROPHIC NUTRITION

In this mode of nutrition, organisms can't prepare their own food on their own. They instead obtain from other organism. Types:

- 1. Holozoic Nutrition-** complex food molecules are taken in and then broken down into simpler and soluble molecules in this type of nutrition. Eg- Amoeba, human being, herbivores, carnivores and omnivores posses this mode of nutrition.
- 2. Saprophytic Nutrition-** In this, organism usually feed upon dead and decay organic matter, breaking down complex material outside body and absorb it. Eg- Fungi, Yeast, etc.
- 3. Parasitic Nutrition-** In this organism live either on or inside the body of organism(host) to obtain nutrition without killing them. Eg- amarbel.



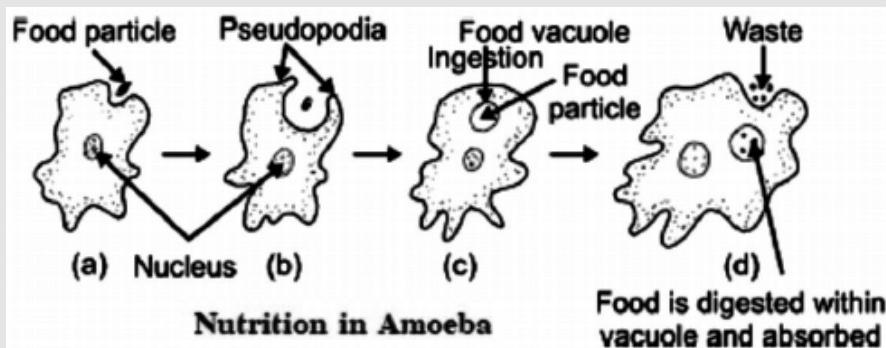
Kuch Kaam Ki Baat (K³B) :

NUTRITION IN AMOEBA

Amoeba is a unicellular organism that does not possess specialised organs for the process of nutrition. Mode of nutrition is holozoic and takes place with the help of pseudopodia.

PROCESS:

- Ingestion: pseudopodia engulfs the food comes in contact with its cell surface and form food vacuole. This process is called ingestion.
- Digestion: it is intracellular (takes place inside the cell) in Amoeba. Inside the food vacuole, complex food is broken down into small soluble molecules.
- Absorption: Small soluble molecules are then readily absorbed by cytoplasm. This process is called Absorption.
- Assimilation: the absorbed food is further assimilated by amoeba to use energy for growth.
- Egestion: the undigested food material is removed by cell membrane which ruptures suddenly at any place and eliminated out the undigested food which is known as egestion.



NUTRITION IN HUMAN BEINGS

Digestion is a catabolic process in which complex and large components of food are broken down into simpler and smaller forms with help of enzymes. These simpler parts are taken by different parts of body and absorbed. Entire system is known as digestive system.

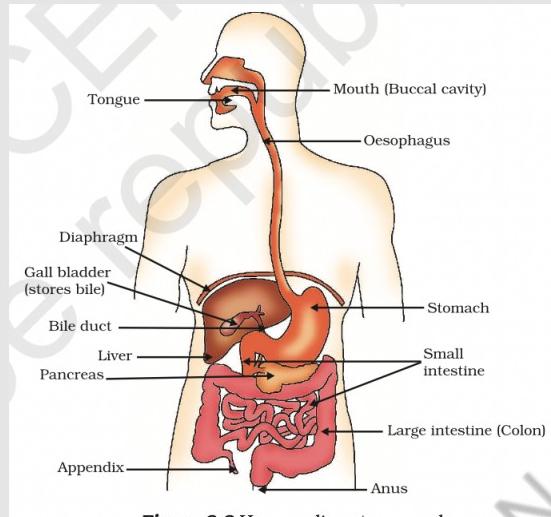


Figure 6.6 Human alimentary canal



(L.P.) : Why herbivores have long small intestine while carnivores have shorter ones?

Herbivores have longer small intestine to facilitate cellulose digestion. Cellulose is not digested by human alimentary canal as there is no digestive enzyme that can act upon cellulose. Carnivores have shorter length of small intestine as meat is easily digestible.

NCERT ACTIVITY (AASAN BHASHA MEI)

Activity 6.3

- Take 1 mL starch solution (1%) in two test tubes (A and B).
- Add 1 mL saliva to test tube A and leave both test tubes undisturbed for 20-30 minutes.
- Now add a few drops of dilute iodine solution to the test tubes.
- In which test tube do you observe a colour change?
- What does this indicate about the presence or absence of starch in the two test tubes?
- What does this tell us about the action of saliva on starch?

Chalo Ab Ise AASAN BHASHA MEI Samajhte hai :

- Take 1 mL starch solution (1%) in two test tubes (A and B).
- Add 1 mL saliva to test tube A and leave both test tubes undisturbed for 20-30 minutes.
- Now add a few drops of dilute iodine solution to the test tubes.

Question 1. In which test tube do you observe a colour change?

Answer. We will observe a colour change in test tube B, showing presence of starch. Whereas test tube A will show no colour change as due to addition of saliva, starch is converted into sugar.

MECHANISM OF DIGESTION OF FOOD

- **Ingestion-** it means taking in food into mouth or buccal cavity. As the food enters the mouth it is moistened by saliva and moved around in mouth in order to make chewing and swallowing easy by tongue. Food is converted to small particles by teeth.
- **Digestion-** as food is complex in nature, so it is converted into its simpler form by the action of biological catalyst called enzymes. This process of breaking down of large organic molecules (like carbohydrates) to small molecules (like simple sugar) is called digestion.
- **Absorption-** it is the process by which digested food passes from alimentary canal into the blood. All the digested food is taken up by walls of intestine. The inner surface of small intestine has numerous villi and lacteals which increase the surface area of intestine and helps in absorption of digested food.
- **Assimilation-** it is the process of distribution of digested food products to various cells of the body for their utilisation in various metabolic processes. The villi in small intestine are richly supplied with blood vessels which take the absorbed food to each and every cell of body to building new cells or repair the older ones.
- **Egestion-** the process of elimination of undigested food formed in the colon of the large intestine through anus is called egestion.

PERISTALTIC MOVEMENT

Contraction and expansion of muscles of the oesophagus to push the food forward.

TABLE : SUMMARY OF DIGESTION ENZYMES OF VARIOUS GLANDS WITH THEIR SECRETIONS AND END PRODUCTS OF DIGESTION IN MAN

| S.No. | Name of gland | Secretion | Site of action | Enzymes | Food acts upon | End product |
|-------|-------------------|------------------|-----------------|--|---|--|
| 1 | Salivary glands | Saliva | Buccal cavity | Salivary amylase | Starch | Maltose |
| 2 | Gastric glands | Gastric Juice | Stomach | Pepsin | Proteins | Peptones & proteoses |
| | | | | Renin | Casein of milk | Paracasein |
| | | | Stomach | — | Pepsinogen | Pepsin |
| 3 | Liver | Bile | Duodenum | — | Fats | Emulsification of fats |
| 4 | Pancreas | Pancreatic Juice | Duodenum | Amylase Trypsin Lipase | Starch & Glycogen Proteins Emulsified fats | Maltose & Isomaltose Peptones & peptides Fatty acids & glycerol |
| 5 | Intestinal glands | Intestinal Juice | Small intestine | Erepsin Maltase Sucrase Lactase Lipase | Peptones & Peptides Maltose Sucrose Lactose Triglycerides | Amino acids Glucose Glucose & fructose Glucose & galactose Monoglycerides & fatty acid |
| | | | | | | — |
| | | Mucous | Large intestine | — | Lubrication of faecal matter | — |



(L.P.) : Differentiate between autotrophic and heterotrophic nutrition?

Autotrophic Nutrition

- (i) In this mode of nutrition, food is prepared by organism itself.
- (ii) Raw material is required to make food.
- (iii) Chlorophyll is present in autotrophs for trapping sunlight.
- (iv) They are known as producers.

Heterotrophic Nutrition

- (i) In this mode of nutrition, food is obtained from other organisms.
- (ii) Raw material is not required.
- (iii) It is absent.
- (iv) They are known as consumers

Tooth Decay :

The tooth decay in mouth occurs due to formation of a plaque. It occurs when bacterial cells act upon the food particles, containing sugars and produce acids that soften the enamel.

Brushing of teeth after eating is one of the treatment.



(L.P.) : What happens if mucus is not secreted by the gastric glands?

If mucus is not secreted by gastric glands, it will lead to the destruction of inner lining of stomach causing acidity and ulcer by HCl.



(L.P.) : A patient in hospital had his gall bladder removed and needs a special diet. Which nutrient free diet would be suitable for this patient?

The diet free from fat would be suitable for the patient whose gall bladder is removed because bile stored in gall bladder helps in the digestion of fat.



(L.P.) : Function of digestive enzymes?

It helps to breakdown large and insoluble food molecules into small water soluble molecules.

Eg- Amylase breakdown, starch and trypsin breakdown, protein and form maltose and peptones.



(L.P.) : How are fats digested in our bodies? Where does this process take place?

The small intestine is site of the complete digestion of fats. The upper part of small intestine receives bile juice from bileduct which contains bile salts for breakdown of fats into smaller globules thereby increasing the efficiency of the enzyme action. This process is known as emulsification. Bile also makes medium alkaline so that pancreatic lipase further converts fats into fatty acids and glycerol. The walls of small intestine also secrete intestinal juice containing enzyme called lipase that finally convert the fats into fatty acids and glycerol. Thus completing fat digestion.



(L.P.) : How is small intestine designed to absorb digested food?

OR

Why does absorption of digested food occur mainly in small intestine?

Maximum absorption of digested food occurs in small intestine due to following reasons-

1. Digestion is completed in small intestine.
2. Inner lining of small intestine is provided with villi which increases the surface area for better absorption.
3. Wall of intestine is richly supplied with blood vessels which take the absorbed food to each and every cell.

RESPIRATION

It is the process by which food is oxidised to release energy. For this oxygen is required from outside of the body to breakdown the food.

The organic substances undergoing oxidative breakdown during respiration are called respiratory substances. Eg- Glucose

Types of Respiration:

1) **Aerobic Respiration:** It is described as the process in which fairly large amount of energy is released in the presence of oxygen from the breakdown of food substances.



- This process starts in cytoplasm and continues in the mitochondria of cell. Each glucose molecule releases 38 ATP molecules. Water and Glucose are waste products. The energy released is utilised in other life processes.

2) **Anaerobic Respiration:** it is described as the respiratory process in which small amount of energy is released in absence of oxygen from breakdown of food substances. It takes place in yeast, bacteria and in human muscles. Only 2 molecules of ATP is released.

Types:

i) **Alcoholic fermentation**- it is the process of incomplete breakdown of sugar into ethanol, and CO₂ to release energy. This process occurs mainly in yeast which is used to produce beer, urine, etc. Equation-



ii) **Lactic Fermentation**- it is process of incomplete breakdown of sugar into lactic acid + energy in some bacteria and in our muscle cells.

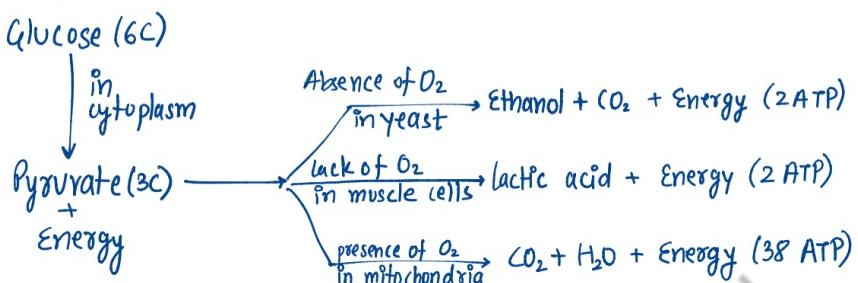


Kuch Kaam Ki Baat (K³B) :

In our muscles during vigorous exercise glucose is metabolised to form lactic acid and then fatigue and muscle cramp occur. This usually takes place when small amount of ATP stored in muscles is used up for immediate need of energy.



Overall process of breakdown of glucose in both aerobic & anaerobic respiration :-



NCERT ACTIVITY (AASAN BHASHA MEI)

Activity 6.4

- Take some freshly prepared lime water in a test tube.
- Blow air through this lime water.
- Note how long it takes for the lime water to turn milky.
- Use a syringe or *pichkari* to pass air through some fresh lime water taken in another test tube (Fig. 6.7).
- Note how long it takes for this lime water to turn milky.
- What does this tell us about the amount of carbon dioxide in the air that we breathe out?

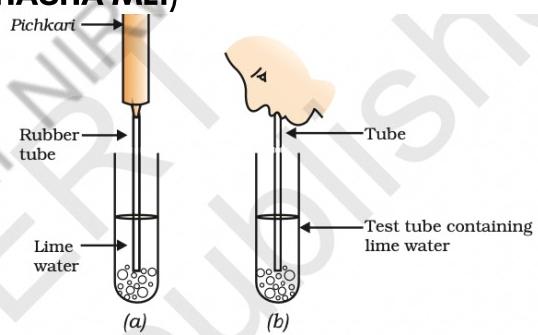


Figure 6.7
(a) Air being passed into lime water with a *pichkari*/syringe, (b) air being exhaled into lime water

Chalo Ab Ise AASAN BHASHA MEI Samajhhte hai :

- Take some freshly prepared lime water in a test tube.
- Blow air through this lime water.

Question 1. Note how long it takes for the lime water to turn milky?

Answer. When we blow air through mouth, the lime water in test tube turns milky within no time. Use a syringe or *pichkari* to pass air through some fresh lime water taken in another test tube.

Question 2. Note how long it takes for this lime water to turn milky?

Answer. When we use syringe or *pichkari*, to pass air through the lime solution, it takes much time and effort to turn the lime water milky.

Question 3. What does this tell us about the amount of carbon dioxide in the air that we breathe out ?

Answer. This indicates that the amount of carbon dioxide in the air that we breathe out is much more as compared to normal air outside.

NCERT ACTIVITY (AASAN BHASHA MEI)

Activity 6.5

- Take some fruit juice or sugar solution and add some yeast to this. Take this mixture in a test tube fitted with a one-holed cork.
- Fit the cork with a bent glass tube. Dip the free end of the glass tube into a test tube containing freshly prepared lime water.
- What change is observed in the lime water and how long does it take for this change to occur?
- What does this tell us about the products of fermentation?

Chalo Ab Ise AASAN BHASHA MEI Samajhte hai :

- Take some fruit juice or sugar solution and add some yeast to this. Take this mixture in a test tube fitted with a one-holed cork.
- Fit the cork with a bent glass tube. Dip the free end of the glass tube into a test tube containing freshly prepared lime water.

Question 1. What change is observed in the lime water and how long does it take for this change to occur?

Answer. The lime water becomes milky as carbon dioxide is produced by mixing yeast in sugar along with alcohol. Time taken for this change to occur, should be observed by students themselves.

Question 2. What does this tell us about the products of fermentation?

Answer. The products of fermentation are alcohol and carbon dioxide.



(L.P.) :Differentiate between aerobic and anaerobic respiration.

Aerobic Respiration

1. It occurs in presence of oxygen.
2. Energy is released in large amount. (38 ATP)
3. Eg- most of plants and animals.

Anaerobic respiration

1. It occurs in absence or lack of oxygen.
2. Energy is released in relatively small amount. (2 ATP)
3. Eg- anaerobic bacteria, yeast.



(L.P.) : Name the energy currency in the living organism. When and where it is produced?

ATP (Adenosine Triphosphate) is the energy currency of cell as it provide energy for doing functions of cells and other organs. It is produced in mitochondria of cell during respiration in the living organisms.

Different stages of respiration

1. External breathing-

a) **Breathing**- it is process of taking in required gas and giving out unrequired gases. It has two types inhalation and exhalation. For eg- human beings, takes in O₂ and gives out CO₂.

b) **Exchange of gases**- it involves diffusion of O₂ from lungs to blood and CO₂ from blood to lungs. In plants, gaseous exchange takes place through stomata of leaf with the environment.

1. Internal breathing- it is gaseous exchange between arterial blood and cells.

(a) **Cellular respiration**- it is process of breakdown of glucose or other respiratory substrate in the cell to produce energy for performing various functions.



(L.P.) : Respiration is a catabolic process. Justify the statement.

It is a catabolic process because it involves the breakdown of complex organic molecule i.e. glucose into pyruvate and further breakdown into carbon dioxide and water with release of energy.



(L.P.) : Anaerobic respiration plays an important role in process of bread making.

Discuss the statement.

During bread making, yeast is mixed with dough where it undergoes anaerobic respiration partially oxidising the starch of flour into CO₂ + ethanol. CO₂ releases in this process causes dough to rise and makes bread fluffy. This shows that it is important.



(L.P.) : Compare alcohol and lactic fermentation.

In alcohol fermentation, pyruvate is breakdown into ethanol and CO₂ with release of energy. Whereas in lactic fermentation pyruvate is breakdown into lactic acid with release of energy.

Respiration in Plants



Lallu Problem (L.P.) : Diffusion acts as the process of gaseous exchange. Write the factors on which it depends.

Factors-

1. Conditions of the environment.
2. Requirements of the plant.



Lallu Problem (L.P.) : Which structures are responsible for the gaseous exchange in the stem of a woody plant?

Gaseous exchange occurs through small pores called lenticels in stem of woody plant.



Lallu Problem (L.P.) : Explain the structures of a plant that are involved in the process of respiration.

1. Roots- the exchange of gases (respiration) in roots of a plant takes place by process of diffusion.
2. Stems- in herbaceous plants stomata helps in respiration and in woody plants, respiration takes place through tiny pores called lenticels.
3. Leaves- respiration takes place by diffusion of oxygen through stomata into cells of leaf and CO₂ released from same stomata into atmosphere.



Lallu Problem (L.P.) : Green plants fail to photosynthesize at night while respiration occurs during the daytime as well as night. Justify the statement.

During night, the process of photosynthesis does not occur in green plants due to absence of sunlight. But respiration keeps on going, plants take O₂ and give out CO₂ in night while in daytime CO₂ is utilised for photosynthesis.



Lallu Problem (L.P.) : Land plants cannot survive for a long time without water. Do you agree? If yes, justify the statement.

Yes, land plants tend to die when their roots are waterlogged for longer time. This happens because O₂ present in soil is not available to perform aerobic respiration. The roots start anaerobically producing alcohol which can kill the plant.



Lallu Problem (L.P.) : What happens to the waste products of respiration generated in a plant?

1. Water- it is usually used for photosynthesis in leaves, as a solvent for transport of mineral salts and nutrients.
2. CO₂- it diffuses out of the plant tissues into surrounding during night. During day time, it is used by the plants in photosynthesis.

Mechanism of gaseous exchange in humans

The phenomenon of taking in oxygen is termed as inspiration and of giving out carbon-di-oxide is termed as expiration.

Breathing or gaseous exchange in human involves three steps-

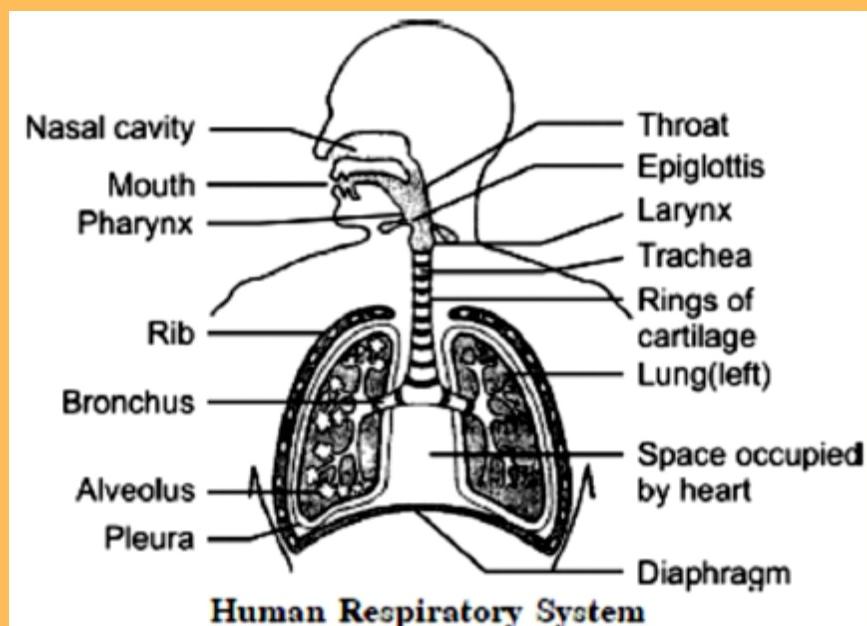
1. **Inhalation**- when we breathe in, air passes through trachea and ribs move up and flatten the diaphragm due to which the chest cavity becomes larger. As a result, air is sucked into the lungs and fills the expanded alveoli.
2. **Gaseous Exchange**- haemoglobin binds with the oxygen and carries along it along the blood in the body. As the blood passes through the tissue of the body, oxygen from the blood diffuses into the cell, and CO₂ which is produced as waste products during respiration diffuses into blood and is carried back to lungs for expiration.
3. **Expiration**- Ribs moves down and diaphragm becomes dome-shaped decreasing the chest cavity. Thus, pushing the air out from lungs.

Complete Pathway-

Nostrils → Nasal passage → Pharynx → Larynx → Trachea → lungs → bronchi → bronchioles → Alveoli → blood → cells.

Parts:

1. **Trachea**- the air passes from it. Rings of cartilage keep trachea open allowing the passage of air to lungs and also prevent it from collapsing when there is not air in it.
2. **Bronchi**- Trachea divides into two smaller tubes on entering air into the lungs.
3. **Bronchioles**- Bronchi are sub-divided into smaller branches called bronchioles. Each bronchioles is finally terminated into many alveoli.
4. **Alveoli**- these are balloon like structures which increases the surface area for gaseous exchange in lungs.
5. **Diaphragm**- Movement in diaphragm helps in breathing.





Lallu Problem (L.P.) : What is the role of respiratory pigment in respiration? Give one example.

Animals have large body size due to which, the diffusion pressure alone can't deliver oxygen to all parts of body. Therefore the respiratory pigments take up oxygen from lungs along with blood and carry into all tissues which are deficient of oxygen.

Haemoglobin is one such respiratory pigment found in Red Blood Cells (RBCs) of human beings to carry oxygen.

Q U E S T I O N S

1. What advantage over an aquatic organism does a terrestrial organism have with regard to obtaining oxygen for respiration?
2. What are the different ways in which glucose is oxidised to provide energy in various organisms?
3. How is oxygen and carbon dioxide transported in human beings?
4. How are the lungs designed in human beings to maximise the area for exchange of gases?

Answer1: For respiration purpose, terrestrial organisms survive on atmospheric oxygen, which is present in plenty, therefore their breathing rate is much less. Whereas aquatic organisms make use of dissolved oxygen from water for their respiration purpose. The concentration of oxygen in dissolved form is very less in the water, therefore rate of breathing in aquatic organisms is much faster compare to terrestrial organisms

Answer2: First step of break-down of glucose, a six-carbon molecule, takes place in the cytoplasm of cells of all organisms. This process results into a three-carbon molecule called pyruvate.

Further, the pyruvate may be broken down in different manners in different organisms

1. *Anaerobic respiration : This process takes place in the absence of oxygen. This process takes place in yeast during fermentation and results in formation of ethanol and carbon dioxide*
2. *Aerobic respiration : In aerobic respiration, breakdown of pyruvate takes place in presence of oxygen to give rise of three molecules of carbon dioxide and water. The release of energy in aerobic respiration is much more than anaerobic respiration.*
3. *Lack of oxygen : Sometimes, when there is lack of oxygen, especially during vigorous activity, in our muscles, pyruvate is converted into lactic acid which is also a three-carbon molecule. This build-up of lactic acid in our muscles during sudden activity causes cramps.*

Answer3: (a) *Transportation of oxygen : The respiratory pigment is haemoglobin, which is present in the red blood corpuscles and has a very high affinity for oxygen. It takes up oxygen from the air in the lungs and carries it to tissues which are deficient in oxygen*

(b) *Transportation of carbon dioxide : Carbon dioxide is more soluble in water than oxygen is and hence is mostly transported from body tissues in the dissolved form in our blood plasma to lungs where it diffuses from blood to air in the lungs and then exhaled out through mouth and nose.*

Answer4: In the lungs, the wind pipe divides into smaller and smaller tubes, called bronchi, which in turn form bronchioles. The bronchioles, which finally terminate in balloon-like structures, called alveoli. The alveoli provide a enlarged surface where the exchange of gases can take place. The walls of the alveoli are very thin and contain an extensive network of blood-vessels to facilitate exchange of gases.

TRANSPORTATION

It is a life process in which a substance absorbed is transported from one body part to its other parts.

In Human Beings

Blood- it is red coloured fluid connective tissue, which circulates in our body.

- Its red colour is due to presence of a pigment called haemoglobin in its red cells.
- The deficiency of haemoglobin in our body is referred to as anaemia.



Maintenance by Platelets:

In case of any injury when bleeding occurs, the loss of blood from the system has to be minimised as it leads to loss of pressure of pumping system. To prevent this, the platelets circulates around the body help in clotting of blood at site of injury.

Functions of blood

1. Transport of excretory products- nitrogenous wastes like urea, uric acid and ammonia are collected from the tissue and are transported to kidney for their removal.
2. Transport of O₂- Haemoglobin present in RBCs combines with O₂ from lungs and transports to all tissues of body for respiration.
3. Transport of CO₂- CO₂ generated as waste products during respiration is transported by blood and haemoglobin attached to it to lungs where it is eliminated.
4. Clotting of blood- Platelets present in blood form a clot at site of the injury to prevent loss of blood.
5. Protection from disease- the WBCs engulfs disease causing microbes and is known as soldiers of body.

Q:- Difference between Artery, Vein and Capillary?

Ans- Arteries

- (i) They are thick walled.
- (ii) Carries blood from heart to different organs of the body.
- (iii) Situated very deep into the skin.

Veins

- (i) They are thin walled and have valves.
- (ii) Carries blood from different organs to the heart.
- (iii) Situated superficially on skin.

Capillaries

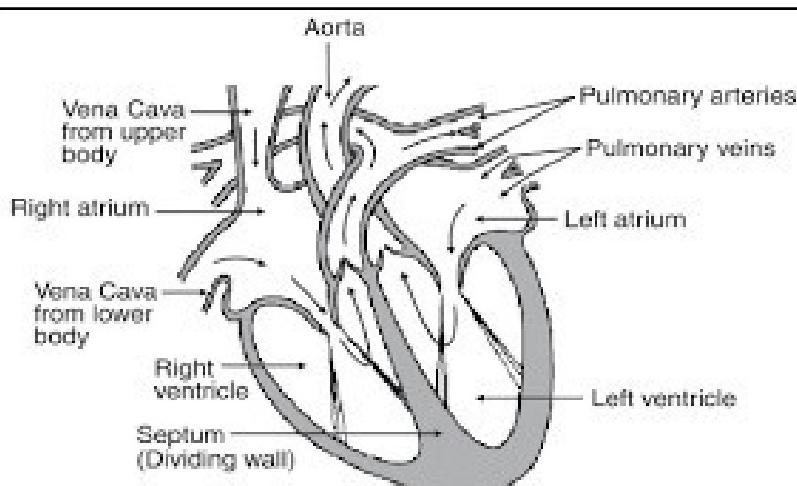
- (i) They have walls that are only one cell thick.
- (ii) Allows exchange of materials b/w blood and surrounding cells.
- (iii) Situated in the terminals of artery on veins.

Heart

It is pumping machine that pushes out the blood into the blood vessels and from these to different parts of the body. It has four chambers separated by septum which prevent mixing of pure and impure blood.

Chambers-

1. Atrium(upper chambers)- there are two atrium separated by septum (dividing walls).
2. Ventricle(lower chambers)- The two inferior chambers of heart are right and left ventricle.



Flow of blood in Humans

Humans have double circulation, which means that blood goes through heart twice to supply blood once around the body.

Process-

1. Pulmonary Circulation- the movement of blood from heart to lungs and back to heart constitutes pulmonary circulation.

Right Ventricle pushes the blood to lungs for oxygenation via pulmonary arteries.



The oxygenated blood comes back to left atrium of heart through pulmonary veins.



The left atrium then pushes blood to left ventricle.

1. Systematic Circulation- The movement of blood from heart to various places of body except lungs and back to heart.

As the blood fills in the left ventricle, the blood is pushed out.



The blood is pumped to whole body via aorta.



The deoxygenated blood enters into right atrium via Vena Cava from lower body.

- Double circulation is considered as it prevents mixing of oxygenated and deoxygenated blood.



Lallu Problem (L.P.) : What would be consequences of deficiency of haemoglobin in our bodies?

Haemoglobin efficiently binds with O₂ and transports to various parts of body. Deficiency of haemoglobin is referred to as anaemia. The consequences of such condition is that blood is unable to carry O₂ required by body for respiration and produce energy. In anaemia, the person feels weak, skin becomes pale, etc.



Lallu Problem (L.P.) : Why is it necessary to separate oxygenated and de-oxygenated blood in mammals and birds?

As they are warm blooded so they need energy constantly to maintain their body temperature. Thus, it is important that their oxygenated blood should not get mixed with deoxygenated blood in order to make circulatory system more efficient.

Blood Pressure

- The pressure at which blood is pumped around the body by heart is called blood pressure.
- The maximum pressure at which blood leaves the heart through main artery during contraction phase, is called systolic pressure.
- The min. pressure in arteries during relaxation phase of heart is called diastolic pressure.

Normal systolic- 120 mm Hg

Diastolic- 80 mm Hg

It is measured by instrument called sphygmomanometer.

- High blood pressure is called Hypertension.

Lymph

It is another type of fluid found in our body, which is also involved in transportation.

Formation- it is formed when some amount of plasma proteins and blood cells escape into intracellular spaces through pores present in capillaries.

Functions- (i) it is involved in transportation of substances where blood vessels do not reach.

(ii) Lymph carries digested and absorbed fat from intestine and drains excess fluid from extracellular space back into the blood.

Lymph Capillaries- Lymph from intracellular spaces chains into lymph capillaries which further join to form large lymph vessels that finally opens into larger veins. They are thin walled.

Some differences between Blood and Lymph

Blood-

1. It is red in colour.
2. Haemoglobin is present.
3. It transports materials from one organ to another.

Lymph-

1. It is colourless.
2. Haemoglobin is Absent.
3. It transports materials from tissues into blood.

Some differences between Lymph capillaries and Blood Capillaries

Lymph Capillaries-

1. They are colourless.
2. They carry lymph.
3. They are wider.

Blood Capillaries-

1. They are red in colour.
2. They carry blood.
3. They are narrower.



Lallu Problem (L.P.) : What are component of transport system in human beings?

Write function also.

The component of transport system in human are-

1. Heart- It pumps and receives blood.
2. Blood- It consists of two main components-
 - a) Plasma- It transports food, CO₂ and nitrogenous waste, etc in dissolved form.
 - b) Blood Corpuscles- they constitute RBCs, WBCs and platelets. RBCs transports respiratory gases, WBCs protect body from harmful pathogens help in clot of blood at site of injury.
3. Blood Vessels- Three Types-
 - a) Arteries- these transport blood from heart to various organs of the body.
 - b) Veins- these transport blood from various body parts to heart.
 - c) Capillaries- These allow exchange between blood and tissues.
4. Lymph- It carries digested and absorbed fats from small intestine.



Lallu Problem (L.P.) : How are water and minerals transported in Plants?

Water and minerals are transported through xylem in plants. The cells in roots that are in contact with soil actively take up ions, creating a difference in concentration of ions between root and soil.

Water moves into root to eliminate this difference of concentration forming a steady movement of water in root xylem. This creates a column of water that is steadily pushed upwards. Further, transpiration of water from leaves creates a partial vacuum that pulls water from xylem of roots to leaves and other parts.



Lallu Problem (L.P.) : Explain why transportation of materials is necessary in animals?

The distribution of all necessary substances such as food, O₂ and water throughout body is carried out through system of transportation. It also displaces wastes from where it is expelled out from body. Thus, it is very important.



Lallu Problem (L.P.) : How is food transported in plants?

The transportation of food is done by phloem by utilising energy (ATP). The transport of soluble products (sugar) of photosynthesis from leaves to other parts of plant is known as translocation. Pressure generated by osmotic pressure allows movement of food from phloem to tissue which have less pressure.

EXCRETION

It is biological process by which an organism removes harmful metabolic wastes from the body.

Types of Organisms

- 1. Unicellular Organism**- these organism get rid of waste products by diffusing it into surrounding through general body. Eg- Amoeba, paramecium.
- 2. Multicellular Organism**- these organism get rid of waste products by specialised organs for function of excretion.

Function of Kidneys

1. It helps in removing excess water from body and nitrogenous waste from blood in form of urine.
2. Maintaining the constant cone.
3. Regulates pH of blood.

Excretion in human beings

The main function of human excretory system is to remove nitrogenous wastes such as urea from the body.

Kidney- the main organ of excretory system. It is reddish brown and bean shaped structure. The left kidney is placed higher than right. It is caused by liver.

Nephrons- it is basic filtering unit found in kidney. It is long coiled tubular whose one end is connected to cup shaped structure called Bowman's capsule contain bundle of blood capillaries called glomerulus that is followed by tubular part of nephrons and loops at some places.

Functioning-

1. Glomerulus filters the blood passing through it.
2. It also ensures to remove only harmful substances from the body that include waste materials.
3. The useful substances like glucose, amino acids, salts, and major amount of water is selectively reabsorbed by tubular part of nephron.
4. Some substances like K⁺ are actively secreted into the urine through tubule.
5. The collecting duct collects the urine and passes it to ureter.



Lallu Problem (L.P.) : Differentiate between Alveoli in lung and Nephrons in kidneys

Alveoli in lungs-

1. These are balloon like structure found within lungs.
2. Diffusion is employed in exchange of gases can takes place.
3. A large no. of alveoli are present in lungs.

Nephrons in kidneys-

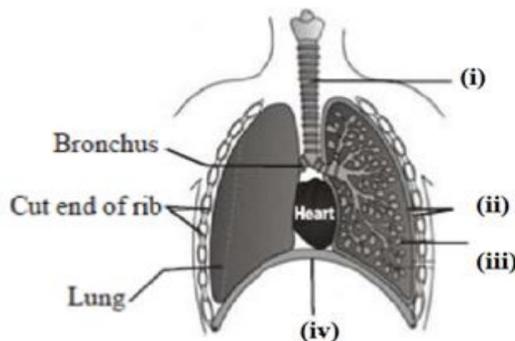
1. These are long, circled tubule-like structure present in kidney.
2. Nephrons apply selective re-absorption of useful substances in capillaries.
3. They are very small in size but are large in no. in each kidney.

Excretion in Plants

1. Gaseous wastes i.e. CO₂ and O₂ are removed through stomata in leaves and lenticles in stems to the air.
2. Plant get rid of excess water by transpiration.
3. Some waste products are stored as resins and gums.
4. Plants also excrete some waste into soil around them.
5. Waste products also stored in leaves which fall off.
6. **Useful Waste**- Essential oils, Gums, O₂(during daytime)

QUESTIONS FROM CBSE SQP 2021-22

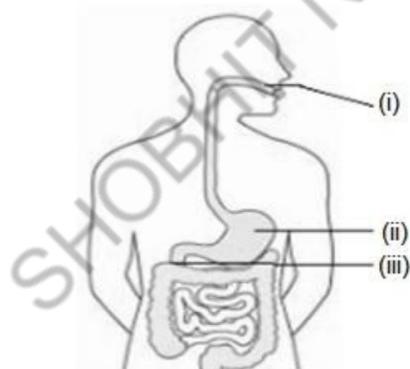
11. Carefully study the diagram of the human respiratory system with labels A, B, C and D. Select the option which gives correct identification and main function and /or characteristic.



Ans-C

- A. (i) Trachea: It is supported by bony rings for conducting inspired air.
- B. (ii) Ribs: When we breathe out, ribs are lifted.
- C. (iii) Alveoli: Thin-walled sac like structures for exchange of gases.
- D. (iv) Diaphragm: It is pulled up when we breathe in.

12. Identify the option that indicates the correct enzyme that is secreted in location A, B and C.



Ans-B

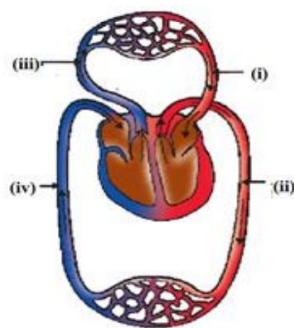
- A. (i)-lipase, (ii)-trypsin, (iii)-pepsin
- B. (i)-amylase, (ii)-pepsin, (iii)-trypsin
- C. (i)-trypsin, (ii)-amylase, (iii)-carboxylase
- D. (i)-permease, (ii)-carboxylase, (iii)-oxidase

13. Opening and closing of stomatal pore depends on:

- A. Atmospheric temperature
- B. oxygen concentration around stomata
- C. carbon dioxide concentration around stomata
- D. water content in the guard cells

Ans-D

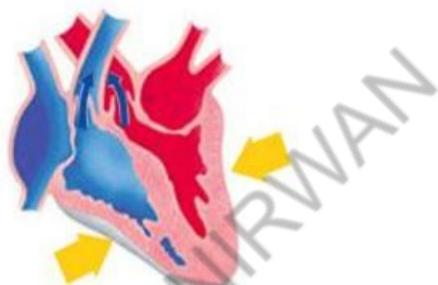
14. The figure given below shows a schematic plan of blood circulation in humans with labels (i) to (iv). Identify the correct label with its functions?



Ans-D

- A. (i) Pulmonary vein - takes impure blood from body part.
- B. (ii) Pulmonary artery - takes blood from lung to heart.
- C. (iii) Aorta - takes blood from heart to body parts.
- D. (iv) Vena cava takes - blood from body parts to right auricle.

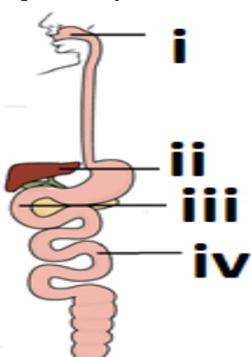
15. Identify the phase of circulation which is represented in the diagram of heart given below. Arrows indicate contraction of the chambers shown.



Ans-B

- A. Blood transferred to the right ventricle and left ventricle simultaneously.
- B. Blood is transferred to lungs for oxygenation and is pumped into various organs simultaneously.
- C. Blood transferred to the right auricle and left auricle simultaneously.
- D. Blood is received from lungs after oxygenation and is received from various organs of the body.

16. Observe the diagram of Human digestive system.



Ans-B

Match the labeling referred in column I and correlate with the function in column II.

| Column I | Column II |
|----------|--|
| i | a. The length of this depends on food the organism eats. |
| ii | b. Initial phase of starch digestion |
| iii | c. Increases the efficiency of lipase enzyme action |
| iv | d. This is the site of the complete digestion of carbohydrates, proteins and fats. |

- A. i- a) ; ii - b) ; iii - c) ; iv- d)
- B. i- b) ; ii - c) ; iii - d) ; iv- a)
- C. i- b) ; ii - d) ; iii - c) ; iv- a)
- D. i- d) ; ii - a) ; iii - b) ; iv- c)

33. **Assertion:** Resins and gums are stored in old xylem tissue in plants.
Reason: Resins and gums facilitate transport of water molecules.

A is true R is false

36. In which of the following groups of organisms, blood flows through the heart only once during one cycle of passage through the body?
- Rabbit, Parrot, Turtle
 - Frog, crocodile, Pigeon
 - Whale, Labeo, Penguin
 - Shark, dog fish, sting ray

Ans-D

37. What is common between extensive network of blood vessels around walls of alveoli and in glomerulus of nephron?
- Thick walled arteries richly supplied with blood
 - Thin walled veins poorly supplied with blood
 - Thick walled capillaries poorly supplied with blood.
 - Thin walled capillaries richly supplied with blood

Ans-D

38. Plants use completely different process for excretion as compared to animals. Which one of the following processes is **NOT** followed by plants for excretion?
- They can get rid of excess water by transpiration.
 - They selectively filter toxic substances through their leaves.
 - Waste products are stored as resins and gums in old xylem.
 - They excrete waste substances into the soil around them.

Ans-B

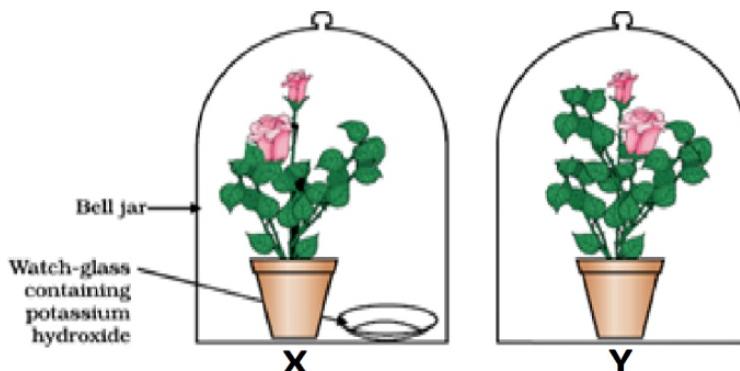
41. In which of the following groups of organisms, food material is broken down outside the body and then absorbed in?
- mushroom, green plants, amoeba
 - yeast, mushroom, bread mould
 - paramecium, amoeba, cuscuta
 - cuscuta, lice, tapeworm

Ans-B

42. In a person the tubule part of the nephron is not functioning at all. What will its effect be on urine formation?
- The urine will not be formed.
 - Quality and quantity of urine is unaffected.
 - Urine is more concentrated.
 - Urine is more diluted.

Ans-D

- Case** The Figure shown below represents an activity to prove the requirements for photosynthesis. During this activity, two healthy potted plants were kept in the dark for 72 hours. After 72 hours, KOH is kept in the watch glass in setup X and not in setup Y. Both these setups are air tight and have been kept in light for 6 hours. Then, Iodine Test is performed with one leaf from each of the two plants X and Y.



| | | |
|-----|---|-------|
| 53. | This experimental set up is used to prove essentiality of which of the following requirements of photosynthesis? A. Chlorophyll B. Oxygen C. Carbon dioxide D. Sunlight | Ans-C |
| 54. | The function of KOH is to absorb A. Oxygen. B. Carbon dioxide. C. Moisture. D. Sunlight. | Ans-B |
| 55. | Which of the following statements shows the correct results of Iodine Test performed on the leaf from plant X and Y respectively? A. Blue - black colour would be obtained on the leaf of plant X and no change in colour on leaf of plant Y. B. Blue - black colour would be obtained on the leaf of plant Y and no change in colour on leaf of plant X. C. Red colour would be obtained on the leaf of plant X and brown colour on the leaf of plant Y. D. Red colour would be obtained on the leaf of plant Y and brown colour on the leaf of plant X. | Ans-B |
| 56. | Which of the following steps can be followed for making the apparatus air tight? i. placing the plants on glass plate ii. using a suction pump. iii. applying aseline to seal the bottom of jar. iv. creating vacuum A. i and ii B. ii. and iii C. i. and iii D. ii. and iv | Ans-C |
| 11 | Select the option which gives correct function and /or characteristic: of the four parts of human respiratory system. A. Alveoli: Thin-walled sac like structures for exchange of gases. B. Diaphragm: It is pulled up when we breathe in. C. Trachea: It is supported by bony rings for conducting inspired air. D. Ribs: When we breathe out, ribs are lifted. | Ans-A |

- 12 Identify the option that indicates the correct enzyme that is secreted in location L, M and N. L, M and N represent Mouth cavity, stomach and small intestine of the human being.

| | L | M | N |
|---|---------|---------|---------|
| A | lipase | trypsin | pepsin |
| B | amylase | pepsin | trypsin |
| C | trypsin | amylase | lipase |
| D | lipase | amylase | pepsin |

Ans-B

- 14 Given below are the functions of some parts of human circulatory system. Identify the correct match.

- A. Pulmonary vein – takes oxygenated blood from body parts to heart
- B. Artery – takes oxygenated blood from heart to lung
- C. Dorsal aorta – takes deoxygenated blood from heart to body parts
- D. Vena cava – takes deoxygenated blood from body parts to right atrium

Ans-D

- 15 What happens when right and left ventricle contract during pumping of blood by human heart?

- A. Blood transferred to the right ventricle and left ventricle simultaneously.
- B. Blood is transferred to lungs for oxygenation and is pumped into various organs simultaneously.
- C. Blood transferred to the right atrium and left atrium simultaneously.
- D. Blood is received from lungs after oxygenation and is received from various organs of the body.

Ans-B

- 16 i, ii, iii and iv represent mouth cavity, liver, first part of small intestine and complete small intestine respectively of Human digestive system.

Match the labeling referred in column I and correlate with the function in column II.

| Column I | Column II |
|----------|--|
| i | a. The length of this depends on the food the organism eats. |
| ii | b. Initial phase of starch digestion. |
| iii | c. Increase the efficiency of lipase enzyme action. |
| iv | d. This is the site of the complete digestion of carbohydrates, proteins and fats. |

Ans-B

- A. i.- c ; ii – d ; iii – a ; iv- d
- B. i.- b ; ii – c ; iii – d ; iv- a
- C. i.- a ; ii – c ; iii – d ; iv- c
- D. i.- d ; ii – a ; iii – b ; iv- c

| | | |
|-------------|--|-------|
| Case | A student was—performing an activity to prove the requirements for photosynthesis. During this activity, he kept two identical healthy potted plants A and B in dark for 72 hours. After 72 hours, he covered plant A and B by bell shaped jars separately. While covering the plants with separate bell jars, he kept KOH in the watch glass by the side of the plant in setup A and not in setup B. Both these setups were made air tight and were kept in light for 6 hours. Then, Iodine Test was performed with one leaf from each of the two plants A and B. | |
| 53. | This experimental set up is used to prove essentiality of which of the following requirements of photosynthesis? A. Chlorophyll B. Oxygen C. Carbon dioxide D. Sunlight | Ans-C |
| 54. | The function of KOH is to absorb A. Oxygen. B. Carbon dioxide. C. Moisture. D. Sunlight. | Ans-B |
| 55. | Which of the following statements shows the correct results of Iodine Test performed on the leaf from plant A and B respectively? A. Blue - black colour would be—obtained on the leaf of plant A B. Blue - black colour would be—obtained on the leaf of plant B C. Red colour would be obtained on the leaf of plant A D. Red colour would be obtained on the leaf of plant B | Ans-B |
| 56. | Which of the following steps can be followed for making the apparatus air tight? i. placing the plants on glass plate ii. using a suction pump. iii. applying Vaseline to seal the bottom of jar. iv. creating vacuum A. i and ii B. ii. and iii C. i. and iii D. ii. And iv | Ans-C |

PREVIOUS YEAR QUESTIONS

(Converted into MCQ format)

Q1 How do autotrophs obtain CO₂ and N₂ to make their food ? [1M, 2008]

- a) CO₂ is obtained from the environment and N₂ is obtained from soil and the environment.
- b) CO₂ is obtained from environment and N₂ is obtained from soil only
- c) CO₂ and N₂ both obtained from environment only
- d) none of these

Answer: a

Q2 Name the green dot structures in some cells observed by a student when a leaf peel was viewed under a microscope. What is green due to ? [1M, 2010]

- a) green coloured chloroplast are present
- b) chloroplast contain green pigment
- c) green pigment is Chlorophyll
- d) All of the above

Answer: d

Q3 What will happen to a plant if Xylem is removed ? [1M, 2009]

- a) transportation of water will not take place
- b) transportation of minerals will not take place
- c) both a) and b)
- d) transportation of carbohydrates will not take place

Answer: c

Q4 Name the tissue which transports soluble products of photosynthesis in a plant _____ [1M, Delhi, 2008]

- a) Xylem
- b) Phloem
- c) Xylem Parenchyma
- d) Phloem Parenchyma

Answer: b

Q5 Match the following [2M, 2008]

- | | |
|---------------------------|--|
| A- Blood vessels | 1. Helps to circulate blood in whole body and acts as a pump |
| B- Blood platelets | 2. Transport of blood |
| C- Lymph | 3. Clotting of blood |
| D- Heart | 4. Carries digested fats |

a) A-2, B-3, C-4, D-1

b) A-2, B-1, C-3, D-4

c) A-3, B-2, C-4, D-1

d) A-3, B-2, C-1, D-4

Answer: a

Q6 In the experimental set up to show that “CO₂ is given out during respiration”. Name the substance taken in small test tube kept in conical flask.[2M, 2019]

a) NaOH

b) HCl

c) KOH

d) BaCl₂

Answer: c

Q7 Which carries blood away from the heart to various organs of the body ?[3M, 2019]

a) Veins

b) Arteries

c) Capillaries

d) none of these

Answer: b

Q8 Which collects blood from different organs and bring it back to heart ? [3M, 2019]

- a) Arteries
- b) Capillaries
- c) Veins
- d) none of these

Answer: c

Q9 _____ are the smallest vessels which have walls, through this wall exchange of materials between blood and surrounding cells takes place.[3M, 2019]

- a) Capillaries
- b) Blood vessels
- c) Veins
- d) none of these

Answer: a

Q10 Which of the following statements is/are true for Aerobic respiration ?[3M, 2008]

- I Oxygen is present when this form of respiration take place
- II It can be found in Cytoplasm, Mitochondria
- III Gases are not exchanged in this form of respiration
- IV Glucose breaks down into CO₂ and water

- a) I, II, III
- b) I, II, IV
- c) only iii
- d) I, ii, iii, iv

Answer: b

Q11 Which juice is secreted by the Pancreas ? [5M, 2010]

- a) Bile juice
- b) Intestinal juice
- c) Pancreatic juice
- d) none of these

Answer: c

Q12 The walls of the small intestine contain glands which secretes _____ juice. [5M, 2010]

- a) Intestinal juice
- b) Bile juice
- c) Pancreatic juice
- d) none of these

Answer: a

Q13 What are two components of the blood ? [5M, 2018]

- a) Blood plasma
- b) Blood cells
- c) both a) and b)
- d) none of these

Answer: c

Q14 Choose the correct movement of oxygenated blood in the body[5M, 2018]

- a) Pulmonary veins -> Left Atrium -> Systemic aorta -> Left ventricle -> All part of the blood
- b) Pulmonary veins -> Systemic aorta -> Left Atrium -> Left ventricle -> All part of the blood
- c) Pulmonary veins -> Left ventricle -> Left Atrium -> Systemic aorta -> All part of the blood

d) Pulmonary veins -> Left Atrium -> Left ventricle -> Systemic aorta -> All part of the blood

Answer: d

Q15 _____ are thick walled whereas _____ are thin walled.[5M,2018]

- a) Veins , Arteries
- b) Capillaries , Veins
- c) Arteries , Veins
- d) none of these

Answer: c

SHOBHIT NIRWAN